Remarks and Arguments

Claims 1-9, 11-19 and 21-30 have been presented for examination. Claims 21-30 have been withdrawn as directed to a non-elected invention. Claims 1 and 11 have been amended.

Claims 1-9 and 11-19 have been rejected over U.S. Patent No. 6,092,138 (Schutte) in view of U.S. Patent No. 5,632,021 (Jennings) and further in view of U.S. Patent No. 5,313,465 (Perlman.) The examiner comments that Schutte discloses the invention as claimed with the exception that the reference does not explicitly disclose selectively forwarding transactions. However the examiner asserts that the Jennings reference discloses a tree bus bridge system in which bridges connect different bus segments. Further the examiner asserts that Jennings discloses selectively forwarding transactions and commands based on the bridge memory base register. The examiner also recognizes that the combination of Schutte and Jennings does not disclose the recited tunnel command. However, the examiner asserts that the Perlman patent discloses the recited tunnel command. Consequently, the examiner concludes that it would have been obvious to combine Schutte, Jennings and Perlman in order to expand the capacity of the system and resolve the address overlap problem.

As mentioned in the response to the previous office communication, the present invention relates to a wired-AND bus bridge that can be used to partition a large wired-AND bus into smaller bus segments. The present claims are directed to a problem that can occur in such a multiple-segment bus system: two slave devices on different segments have the same address. In accordance with the principles of the invention, this problem can be solved by tunneling bus transactions through the bridge from one bus segment to another bus segment. In particular, each bridge in the system has its own bridge address so that commands can be addressed to it. Thus, a tunnel command, which can be addressed to the bridge itself, contains both data and a slave device address. Because the slave device address appears only as data on the main bus, no slave devices respond even if they have the same address. The command is received by the bridge and the bridge extracts the data and the slave address and forwards the data to the slave address.

First, it is noted that all three references that the examiner proposes to combine are directed to different technologies and to different problems. The cited Schutte reference is directed to a wired-AND bus system as is the present invention. Whereas the present invention deals with the bus loading problem common in such systems by dividing the bus system into segments that are small enough to avoid the bus loading problem, Schutte discloses the typical prior manner of dealing with bus loading by using special pull-up resistors. The problem solved by Schutte is dealing with master units that cannot operate with the special pull-up resistors. This is solved by using a bridge to isolate the masters that cannot operate with the special pull-up resistors from the masters that can use the special pull-up resistors when the special pull-up resistors are being used. When the special pull-up resistors are not being used, the bridge connects the bus segments together into one integrated bus system. Schutte discloses nothing about dealing with duplicate addresses because this problem does not arise since Schutte does not disclose dividing the bus system into completely separate segments.

The Jennings reference discloses a PCI bus system, which is not a wired-AND bus system. The operation of this bus system is substantially different from the wired-AND systems and applicant contents that one skilled in the art would not look to the PCI art to solve a duplicate address problem in a wired-AND bus system since the two systems operate so differently and the problem cannot occur in PCI bus systems. As is well-known, a PCI bus is "auto-configuring", with addresses being dynamically allocated during a configuration process. In particular, during the configuration process, each PCI bus in the system is given a different bus number that effectively becomes part of the device address. Consequently, each address in the PCI bus system is unique; duplicate addresses cannot occur and Jennings discloses no solution for dealing with this problem. Instead, Jennings is concerned with eliminating a "livelock" problem which is peculiar to the PCI bus operation and which is irrelevant to the duplicate address problem solved by the present invention.

Further, the examiner proposes to combine with Schutte and Jennings, the Perlman reference, which is directed to yet another technology: packet switching networks. In this type of network, duplicate addresses can occur, but Perlman deals with the duplicate addresses in a manner completely different from the present

invention. In particular, Perlman adds a domain ID to each address and places destinations with the same address in different domains, thereby effectively making the addresses different. Routers connecting two domains can then be programmed to allow communication between the domains.

Again applicant contends that one skilled in the art would not look to the packet switched network art to solve a duplicate address problem in a wired-AND bus system since the two systems operate so differently and the problem is solved in a different manner in the packet switched system.

The examiner suggests that the protocol encapsulation disclosed in Perlman corresponds to the recited tunnel command. Protocol encapsulation is a well-known technique used to allow a network that operates with a first protocol to communicate with another network that operates with the first protocol over a backbone network that uses a second protocol. In accordance with this technique, a source generates a message in the first protocol. When the message is received by a router connecting the source network to the backbone network, the message is placed as the data in a second message in the second protocol and sent to a router that connects the backbone network to the destination first protocol network. When the encapsulated message arrives at the second router, that router extracts the data (the first protocol message) and sends it to the destination.

However, as claimed, the tunnel command operates in a different manner. The recited tunnel command is generated by a bus master. For example, claim 1 recites, in lines 11-12, that the tunnel command is sent from a bus master. In Perlman, this would correspond to the encapsulation being performed by the message source rather than the router as disclosed in Perlman. Further, the recited tunnel command is sent to a bridge address. Claim 1, in lines 4-5, recites that each bus bridge has a bridge address and, in lines 13-14, that the tunnel command is sent to a bridge address of a bus bridge connecting the first and second bus segments. In Perlman, a message is sent to a destination, not to a router.

Therefore, none of the references suggest using a tunnel command in the manner claimed. Further, the references are directed to different problems that result from different technologies. Clearly, the examiner has selected certain concepts from

each of the references and reworked these concepts to fit into a wired-AND bus system. However, the only suggestion for selecting these concepts and the manner of reworking them to fit into a wired-AND bus system comes from the present disclosure. Use of the invention in this manner is improper. Consequently, Jennings combined with Schutte and Perlman cannot disclose or suggest a tunnel command along the lines recited in amended claim 1.

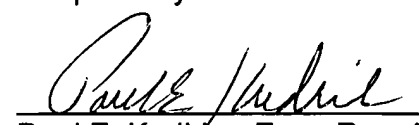
Claims 2-9 depend, either directly or indirectly on amended claim 1 and incorporate the limitations recited therein. Therefore they distinguish over the cited combination of references in the same manner as amended claim 1.

Independent claim 11 has been amended to include limitations that parallel those in amended claim 1. Consequently, amended claim 11 distinguishes over the cited combination of references in the same manner as amended claim 1.

Claims 12-19 depend, either directly or indirectly on amended claim 11 and incorporate the limitations recited therein. Therefore they distinguish over the cited combination of references in the same manner as amended claim 11.

Based on the above discussion, claims 1-9 and 11-19 are allowable and advancement of this application to issue is respectfully requested. The Commissioner is hereby authorized to charge any fees or credits under 37 C.F.R. §1.16 and 1.17 to our deposit account No. 02-3038.

Respectfully submitted



Date: 12/27/04

Paul E. Kudirka, Esq. Reg. No. 26,931
KUDIRKA & JOBSE, LLP
Customer Number 021127
Tel: (617) 367-4600 Fax: (617) 367-4656